

## Responses to Public Utilities Review Committee List of Questions Dated October 17, 2008

1. What action do you anticipate from the U.S. Congress as to climate change Legislation? What impact may this have on South Carolina?

*According to public comments by leaders in Congress, legislation to limit ghg emissions is coming. However, crafting this legislation will take time and will require substantial public input. Historically, major environmental initiatives have taken up to ten years to develop and pass and have been overwhelmingly bipartisan in nature. This level of support has not been achieved in the past two years and action in the near term will require significant time and effort from the new Administration and Congress.*

*Because of the close linkage between US economic output and ghg emissions (through energy consumption in the commercial, industrial and transportation sectors) analysis done by entities such as the US EPA and the Department of Energy show that the faster reductions are mandated the more costly the program will be in terms of lost economic activity. In part this is because the technology necessary to control emissions is not commercially available. For point sources like coal plants, the technology is not projected to be available until after 2020. Balancing the need for action to promote environmental goals with the costs of the program will be delicate and will be critical to attaining the support necessary to become law. This is especially the case given recent economic activity.*

*An example of the current lack of consensus regarding the best approach to addressing ghg emissions can be found in the debate and subsequent vote this spring in the Senate on a bill authored by Senators Warner and Lieberman called the Climate Security Act of 2007, S. 2191. The procedural vote, which required 60 to prevail, failed by a vote of 48-36. Most importantly, nine Senators who voted in support of the motion wrote a letter to the leader of the Senate to advise him that, though they supported the procedural measure, they would have opposed the underlying bill. Though this vote demonstrates a current lack of agreement, Congress will continue to debate the best method to regulate ghg emissions and is expected to come to agreement on ghg regulation.*

*Once Congress does pass legislation, we must also recognize that there will be a transition period before the regulatory mechanisms can be put in place to implement the new law. Proposals introduced in Congress in 2007 and 2008 generally allowed for at least 4 years before full scale implementation. During this period regulated entities will have the opportunity to prepare for the new requirements and to seek lowest cost alternatives to meet reduction mandates. If a bill is not passed until 2010, it is likely that several years will pass before the implementing regulations can be finalized and put in place.*

*South Carolina will see an increase in energy costs as a result of ghg regulation. Analysis done on the Climate Security Act suggests that South Carolina, and the Southeast in general, will suffer economic harm to a disproportionately greater extent than regions of the country such as the Northeast and West Coast<sup>1</sup>. The reliance on fossil fuels for electric generation is responsible for some of this impact, so too is the lack of available alternatives to the current generation such as renewables. According to the American Council on Capital Formation, the Climate Security Act would have cost South Carolina between 18,000 and 27,000 jobs by 2020 and as many as 68,000 jobs by 2030<sup>1</sup>. The same study concluded disposable income would decrease by \$778 to \$2,522 in 2020 and as much as \$5,978 in 2030.*

*Under the same proposal, the cost of the CO<sub>2</sub> allowance shortfall for Santee Cooper's electric generating system was estimated to be over \$500 million for the first year of the program in 2012 and increase to over \$6 billion by 2050<sup>2</sup>. These costs would be passed on to Santee Cooper's retail and wholesale electric consumers. The purpose of outlining these rate impacts is not to suggest that the increases will happen, but rather to suggest that the significant economic impact of the current proposals is not likely to be acceptable under the current economic situation. Additional work will be required to identify more reasonable approaches that can be absorbed by the US economy without further eroding our competitive position in the world. These cost increases are driven by a number of factors, but the most significant driver is the potential failure of policymakers to recognize that a period of transition will be required for regulated entities to transition from the current economy to an economy that includes a cost for ghg emissions.*

2. Does South Carolina have governmental resources available to study, plan, or act upon current or future energy policies? Are these resources sufficient? Are these resources appropriately empowered to act? Is there any overlapping of roles?

*South Carolina has many governmental resources available to be involved with studying, planning or acting on current or future energy policies and overlap in that effort is natural. Having many resources, governmental and non-governmental, involved is beneficial. The key is that South Carolina effectively manages all of these resources. The State Energy Office has been working to facilitate the use of various state resources in support of energy policy in South Carolina. It makes sense to have a general agency, like the State Energy Office, continue that effort because the management involves such a broad spectrum to include not only electricity, but also, transportation, construction, government, economic development, manufacturing, farming, businesses and families. Effective management of these resources is critical because it offers the citizens, businesses, governments and elected officials of South Carolina the ability to*

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<sup>1</sup> [http://www.accf.org/media/dynamic/2/media\\_270.pdf](http://www.accf.org/media/dynamic/2/media_270.pdf)

<sup>2</sup> Allowance costs are in 2007 dollars and based on allowance cost estimates from the EPA analysis of S. 2191 scenario #2, which uses a number of optimistic assumptions concerning CCS, new nuclear and availability of offsets.

*successfully implement energy policies that make a difference. If it is determined that more management is necessary, then the statutes that govern energy policy in South Carolina could be updated to reflect that.*

3. How do we use electricity in South Carolina? How is our use different from other states, with respect to amount of use and type of use? What factors drive this usage? What can we do to better use our energy resources? What demographic or other factors prohibit or inhibit our ability to be more energy efficient?

*Based on information available from the Department of Energy, Energy Information Administration (EIA), South Carolina industrial customers consumed approximately 39 percent of all electricity in South Carolina, followed by residential customers at 35 percent, and commercial customers at 26 percent.*

*For Santee Cooper's direct service territory, manufacturing processes for aluminum, steel, and chemicals are the predominant end-uses of electricity in the industrial sector. Residential household consumption is comprised of four primary uses: space heating, water heating, cooling, and various base end-uses (lighting, refrigeration, cooking, clothes washing and drying, computers, televisions, electronic components, other miscellaneous). Commercial electricity consumption varies among heating, cooling, water heating, and process load.*

*Based on data for Santee Cooper's retail and wholesale sales, most electricity during the summer months is consumed between 3 p.m. to 7 p.m. on weekdays. During the winter months, high periods of consumption fall between 6 a.m. to 9 a.m. and 6 p.m. to 10 p.m. on weekdays.*

*Based on information available from EIA (2006), South Carolina ranks relatively low in terms of number of industrial customers and relatively high in terms of average use per customer. In Santee Cooper's retail and wholesale service territory, average industrial use per customer is relatively high due to the proportionately high number of large energy-intensive industrial operations located throughout the service territory. South Carolina's comparatively low average retail price to industrial customers, combined with the state's proximity to the Atlantic Ocean and ports, makes South Carolina a prime location for export industries.*

*Per the EIA, with respect to residential customers, South Carolina ranks relatively high in terms of electric use per customer. In Santee Cooper's retail and wholesale service territory, this is due to the amount of electric heating, electric cooling, and electric water heating. A number of factors, such as weather conditions in the Southeast and power prices as compared to other areas of the United States, lead to this high percentage of electricity usage.*

*EIA data with respect to commercial customers shows average use is lower than in most states due to the large number of small commercial establishments.*

Santee Cooper has encouraged efficient use of electricity for over 20 years. Please see response to Question 6 for a discussion of energy efficiency programs currently in place.

4. What types of renewable sources of energy are available in South Carolina?

In 2007, GDS Associates and La Capra Associates conducted a study for Central Electric Power Cooperative entitled “Analysis of Renewable Energy Potential in South Carolina”. This study detailed the Technical and Practical Potential of renewable resources within South Carolina. The study did not determine which resources were cost effective. The following table is a Summary of the Practical Renewable Potential energy detailed in the study.

### Summary of Practical Renewable Potential

	Technical Potential (MW)	Practical Potential* (MW)	Practical Generation (GWh)
Wood Biomass	1,599	423	3,148
Agricultural By-Products	362	68	504
Landfill Gas to Energy	90	70	518
Hydroelectric (MWa)**	210	105	919
Onshore Wind	100	-	-
<b>Total***</b>	<b>2,361</b>	<b>up to 665</b>	<b>5,089</b>
Offshore Wind	N/E	N/E	N/E
Solar PV	N/E	N/E	N/E
Ocean (Tidal, Wave, Current)	N/E	N/E	N/E

\*Practical Potential is the maximum potential that might reasonably be expected to be implemented

\*\*Hydroelectric potential is measured in average MW based on annual mean flow rates or estimated annual production.

\*\*\*Total may not add up due to rounding.



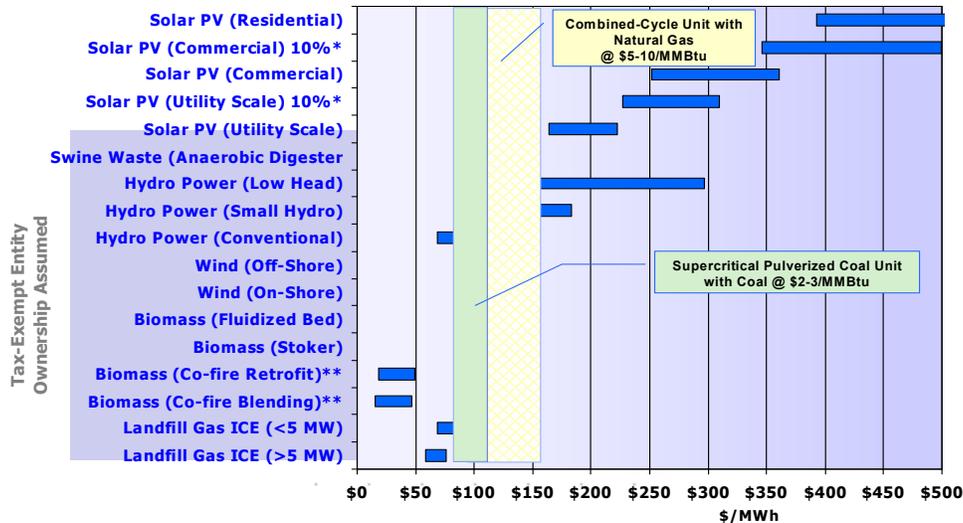
N/E: Off-shore Wind, Solar and Ocean power resource potential were not estimated because resources are abundant but available technologies have not achieved maturity or permitting issues introduce uncertainties for estimate.



What is the expected cost to produce and transmit electricity from those resources?

The above study also estimated the cost to produce electricity from each type of renewable resource. The following graph is a Levelized Cost Comparison of Renewable Energies given in 2008 dollars. The study did not, however, determine the price at which a renewable power project developer may decide to sell its renewable power to a utility within South Carolina, or outside of South Carolina.

## Levelized Cost Comparison (2008\$)



\*Cost estimates include reduction of federal solar tax credits to 10% after 2007 for commercial/utility scale installations.  
 \*\*Co-firing costs are calculated as incremental costs of avoiding coal consumption for generation (\$2.25/mmbtu (2006\$) coal cost assumed).

5. What types of non-native renewable resources are available to South Carolina? What is the expected cost to transmit electricity from those resources to South Carolina.

*Santee Cooper has not reviewed any studies that determine the types of non-native renewable resources that are available to South Carolina, or the cost to transmit the electricity.*

6. What programs that promote energy efficiency exist in our state? Are these programs affordable to all South Carolinians? Should they be affordable to all South Carolinians? Are energy efficiency measures a cost-effective alternative to the construction and operation of generation facilities? How should energy efficiency incentives be designed?

*Santee Cooper has offered energy efficiency and demand-side management programs to its customers for almost 30 years. Properly designed and implemented programs can be a cost-effective alternative to the construction and operation of generation facilities. However, implementation of a particular energy efficiency measure typically requires a long timeframe for even partial market penetration of that measure and will not offset the total requirement to construct generating facilities to serve customers.*

*A summary of Santee Cooper's existing programs is as follows:*

**I. Existing Demand Side Management (DSM) Energy Efficiency Programs**

▶ **Good Cents New and Improved Home**

The Good Cents Program was developed to provide residential customers an incentive to build new homes to higher levels of energy efficiency and improve existing homes by upgrading heating and air conditioning equipment and the thermal envelope to high energy efficiency standards. Good Cents Homes use less electricity for heating, cooling, and water heating, and customers qualify for a lower electric rate.

▶ **H2O Advantage Hot Water Heater Program**

H2O Advantage is a storage water heating program designed to shift the demand related to water heating off-peak. This is accomplished with the installation of an electronic timer or radio controlled switch on an 80 gallon water heater. This program began in 1990 and was offered to participants for the last time in 1999.

▶ **Commercial Good Cents**

The Good Cents program encourages the construction of new energy efficient buildings. Good Cents construction standards apply to the building envelope, HVAC equipment, and interior lighting. A cash incentive, based on conditioned square footage, is offered when the building meets program standards.

▶ **Thermal Storage Cooling Program**

This program enables commercial and industrial customers to shift the electrical demand for air conditioning to off-peak periods when the demand is low for electricity. This system makes ice or chills water at night (off-peak) and stores it for daytime cooling needs. Santee Cooper will perform an initial screening to determine if a thermal storage unit would be beneficial to your business. If we find that the project is feasible, the project is eligible for co-funding for an engineering study to qualify the advantages of thermal storage. Additionally, a rebate of \$200 per kilowatt shifted off-peak when the system is installed is offered to help offset the initial cost of the system.

▶ **Large Load Curtailment – 513 MW under contract**

Santee Cooper has non-firm rates that give customers an economic signal to reduce load during high cost periods and also gives Santee Cooper the ability to physically curtail this load during system emergencies. With these rates we are able to serve a large sector of the industrial market with economical power without having to build additional generation.

▶ **Time of Use Rates**

Time based rates offered to residential and commercial customers that include higher charges during on peak times to encourage conservation during these times and load shifting to off peak times

▶ **Low Interest Good Cents Loans**

Santee Cooper's attractive low interest Energy Efficient Loan Program can help with the purchase of an electric heat pump or the financing of certain energy efficiency measures. Rates are often considerably lower than conventional loans, and customers can apply for loans ranging from \$500 to \$20,000 with no money down and up to 60 months to repay loans over \$1000. Interest rates were dropped to equal Prime minus 2% in July 2006. As of October 1, 2008, the interest rate was 3%.

▶ **Residential On-Site Energy Audits**

Residential customers can request a walk-through energy audit. This audit is a basic evaluation of the home's envelope, HVAC equipment, lighting fixtures, and appliances such as water heaters, refrigerators, freezers, and cooking

equipment. Recommendations are made for cost effective energy efficiency measures to reduce the home's energy use.

▶ **Commercial On-Site Energy Audits**

Commercial customers can request a walk-through energy audit. This audit is a basic evaluation of HVAC equipment (efficiency, ductwork, and filters), lighting fixtures, and appliances such as water heaters, refrigerators, coolers, freezers, and cooking equipment. Other observations include the building structure itself, thermostat settings and energy management systems. An energy management consultant can be contracted to provide more in-depth analyses.

▶ **On-line Energy Audits**

Residential Online Energy Audits is a tool for customers to use to see how to reduce their energy consumption and lowering their utility bills. The Personal Profile Report will outline areas where improvement is needed and describe helpful energy saving ideas with the [Energy Library](#).

▶ **Efficient Lighting Analysis**

Santee Cooper's current lighting program applies to outdoor lighting - typically parking lots, subdivisions, and streets. All lighting designs are according to IESNA standards with consideration for efficiency, cost, security, and wildlife. A list of lighting consultants can be provided for interior lighting needs.

▶ **Energy Educator's Institute**

A graduate level course offered by Santee Cooper for certified K-12 teachers and administrators accredited through Charleston Southern University. Participants explore the scientific concepts of energy, its sources, use and impact on the environment, economy and society. A real-world understanding of the power and purpose of electricity is learned through presentations by energy experts, discussions, field experiences and hands-on activities. Teachers complete the Institute armed with materials relevant to the curriculum and correlated to state standards.

▶ **Market Compact Fluorescent Bulbs (CFL's)**

Santee Cooper has distributed compact fluorescent lights (CFLs) to new residential and commercial customers to encourage energy efficiency and market energy saving products. In addition on April 22, 2008 Santee Cooper began offering 12 free CFL's to all retail residential customers. The CFL's were available for customer pickup at all Santee Cooper's Customer Service Offices. CFL's use 75% less energy and last up to 10 times longer. As of October 1, 2008, over 750,000 CFL's have been picked up by customers, with a goal of distributing a total of 1.6 million bulbs.

▶ **Solar Homes Initiative**

The Solar Homes Initiative, the first of its kind in South Carolina, is a solar panel rebate program that helps Santee Cooper customers to go green by installing solar panel equipment on their homes. Santee Cooper is offering a rebate of \$3,000/kW, up to a maximum of \$12,000/customer, to the first 10 customers to sign-up under the Solar Homes Initiative. Participating customers are also eligible for a 0% interest loan to help finance the remaining cost of their PV system, up to a maximum cost of \$40,000/customer. Santee Cooper also assigns an Energy Advisor to work with each customer and assist them in getting the maximum benefit from their solar PV system.

▶ **Promote Leadership in Energy and Environmental Design (LEED) Certified Construction**

Santee Cooper is applying for membership to the United States Green Building Council, (USGBC). Several Santee Cooper representatives have been involved in the local branch of the South Carolina chapter of the USGBC. In addition,

Santee Cooper is assisting a Myrtle Beach area builder with the first home in our service territory pursuing LEED certification.

- ▶ **Trade Associations and Certified Heat Pump Dealers**  
Santee Cooper is a member of several trade associations that allows us the opportunity to promote our energy efficiency and conservation programs. We also maintain a list of contractors that meet certain requirements for installing energy efficient equipment and measures.
- ▶ **Power Points Newsletter Bill Insert**  
In an effort to keep customers abreast of the latest developments at Santee Cooper and in the electric industry we developed PowerPoints which we send to our residential customers in their monthly bill envelopes. We use this to communicate our energy efficiency and conservation programs among other topics.
- ▶ **Power Report Newsletter Bill Insert**  
To promote wise energy use and assist your business in keeping abreast of the fastest deployments at Santee Cooper and in the electric industry we developed The PowerReport which is distributed to our commercial customers in their monthly bill envelopes. We use this to communicate our energy efficiency and conservation programs among other topics.
- ▶ **Brochures/Printed Materials**  
Santee Cooper maintains an inventory of several brochures and fact sheets that assist our customers in making wise energy usage choices. Below is a sample list of these brochures.  
[Are You Saving Energy While You're Away?](#)  
[Be Cool and Save](#)  
[Heat/Cool & Save Energy with a Heat Pump](#)  
[Where Your Energy \\$'s Go](#)
- ▶ **On-hold Messaging**  
Messages that anyone calling Santee Cooper hears while waiting on a customer service representative encourage participation in Santee Cooper's programs and services including energy efficiency.
- ▶ **News Releases**  
Santee Cooper uses press releases to promote energy efficiency activities.
- ▶ **Web Site**  
[www.santeecoopergreen.com](http://www.santeecoopergreen.com) – Customers can be in touch with Santee Cooper 24/7 through the website where users can learn more about Santee Cooper's programs and services including energy efficiency.
- ▶ **Speakers Bureau**  
Santee Cooper provides speakers for presentations to civic and community groups on a variety of topics including Santee Cooper's energy efficiency programs and services.
- ▶ **Purchasing High Efficiency Distribution Transformers**  
Santee Cooper has always evaluated transformers on a total evaluated cost (first cost plus cost of losses). Santee Cooper bought several amorphous core transformers to evaluate several years ago. These transformers did have a more expensive first cost. Santee Cooper continues to evaluate high efficiency transformers and purchase when cost effective.

▶ **Net Billing Program**

Santee Cooper will pay its residential customers who produce excess renewable energy through solar panels or other means and gets it into the utility's distribution system.

▶ **Offer Low Interest Loans to Install Renewable Energy**

Santee Cooper loans its customers a low interest loan to install renewable generation qualifying under the net billing program. Santee Cooper's customers can borrow up to \$40,000 and have up to 10 years to repay the loan. As of October 1, 2008, the interest rate was 3%.

7. The heavy use of concrete and steel to construct coal and nuclear generating facilities in China, India, and other developing nations and the importation of fuel needed to create energy from those facilities has increased the price of these raw materials and commodities beyond most projections. Is this level of growth sustainable? Will prices continue to be driven by this global demand? How will South Carolina be affected by this global demand?

*Global commodity pricing for steel, copper, cement, crude oil, nickel, zinc, iron ore, and other materials have experienced sharp rises (in some cases exceeding 225%) since early 2004, and these commodities account for many of the materials used in the manufacture of engineered equipment and materials. Much of the worldwide demand was driven by the Chinese markets, which applies export restrictions resulting in internal consumption of many of the products the Chinese could bring to market. Between 2005 and 2007 China alone accounted for over 30% of all global commodity consumption, and despite increased worldwide supply during this period demand still far outpaced supply, leading to serious price increase impacts.*

*Although prices have provided challenges to commodity purchasers and manufacturers, for the mills (i.e., steel, pipe, etc.) producing these products the increased demand and short supply have led to favorable conditions and profits. This in turn has encouraged industry mergers, acquisitions, consolidations and investments in capacity expansion, which could eventually result in increased supply that could have a downward pressure on pricing. However, recent events (i.e., serious declines in oil and scrap steel pricing, global economic meltdown, supply/demand balances, currency fluctuations, etc.) have led to sharp cuts in output by many world mills trying to maintain high demand and profitability. Further, China requires high annual internal growth rates to sustain its economy, and in response to shrinking growth below 10% annualized has proposed an infrastructure improvements stimulus plan of nearly \$600 billion.*

*All of this market turmoil suggests that global demand for many commodities will probably weaken in the near term (next 6 months to 1 year), but this contracting demand may only tend to reduce incentive by manufacturers to bring product to market and not force pricing to seriously erode or remain depressed for very long, unless global economic conditions further curtails demand. A longer, sustained economic recession may tend to shrink consumption further.*

*Pricing will continue to be a function of worldwide, specifically Asian, demand factors. As indicated above, suppliers/producers were on the verge of major expansions in capacity, but in light of recent events are actually reducing output in response to a slumping economy in the hope of halting further price declines. Some commodity pricing has fallen to levels not seen since 2005, which was still 50% higher than the late 1990s through 2003 period. Although it doesn't appear that the serious price spikes of 2008 are sustainable considering global economic conditions, it does look like the new price threshold will be somewhere around the 2004/05 levels, although where pricing actually stabilizes is anyone's guess.*

*If global demand remains high one would expect increasing costs for raw materials, commodities, and manufactured products. On the other hand should global demand recede, one should expect an accompanying reduction in pricing in an attempt to lower the inventory levels. What we have seen in the markets, and will continue to see by all informed accounts, is a classic microeconomic reaction of supply to demand, which in turn impacts price.*

*One impact of the 1990s was a reduction in the fabrication capacity of the US as the result of higher risk projects and lower demand. Recently, some of that capacity has been coming back and was particularly preparing for continued expansion in the power equipment markets. Steel and pipe fabricators, machine shops, forging and casting shops, etc., were experiencing increased demand and poised to expand capacity. An immediate impact of high global demand would be an increased manufacturing base in the US, which should help stabilize pricing for services; obviously, if demand shrinks this capacity will also. A few years ago concrete and aggregates were also problems for the southeast US region. Recent capacity expansions should help new projects. Pricing for concrete has been about 5% (\$5/ton) higher than 2007 levels for the past 6 months. One would also expect construction costs to levelize considering depressed US market demand.*

*Generally, for the next year to 18 months, and possibly more dependent on market conditions, South Carolina should expect favorable project equipment, material and construction costs relative to the recent past. Healthy competition for approximately 75% of the project's costs, including construction services, some engineered equipment components (i.e., valves, instrumentation, tanks, steel fabrication, etc.), and some commodities (i.e., rebar, concrete, etc.) should also help to control inflationary trends. Conversely, one of the problems for some other components, equipment, and materials (approx. 25% of the project's costs) used in major power projects is that there are few suppliers, manufacturers and fabricators. In some cases it's practically a monopoly with only certain mills or manufacturers making certain products (i.e., Nucor, Arcelor/Mittal, few legitimate fan manufacturers, etc.).*

*Coal prices spiked due to heavy demand from Europe, India and China. Likewise, petroleum and many hydrocarbon based chemicals used in energy*

*production spiked to unprecedented levels. Fuel oil, caustic soda, sulfuric acid, ammonia, DBA, and other chemicals are included. Prices have now begun to decrease. Lower demand and market turmoil are responsible for the fluctuations. Markets have not returned to pre-spike levels at this time.*

*Prediction of coal pricing is difficult due to many issues related to environmental restrictions and coal mine permitting and demand uncertainty in the face of worldwide economic issues. Petroleum and hydrocarbon based chemicals are also uncertain due to environmental restrictions on domestic manufacture, hurricane damage to facilities in the gulf region, transport issues, and reliance on offshore production. This coupled with economic issues makes future prediction of pricing and availability uncertain. Presently, prices appear to be moderating and are expected to reduce further in the near term.*

8. How has the current economic situation affected the projections for energy use?

*Santee Cooper is evaluating the potential effect of the current economic situation on projected energy use. There are a number of currently unknown factors that will influence these projections including but not limited to, duration of the economic slowdown, impact on numbers of new commercial and residential customers, and impact on the activity of industrial customers. Santee Cooper will continue to monitor these factors as well as others to estimate the impact on future energy usage.*